

Discussion of the Amendment

Claims 1-8 are pending.

Claims 1 and 5 are amended. Support for the amendment to claim 1 is found in claim 5. Claims 9-13 are added. Support for new claims 9-10 is found on page 20, lines 23-26 of the Specification. Support for new claim 11 is found by calculating a bubble volume expansion ratio from the bubble radius data presented in Table 1 on page 14. Support for new claim 12 is found on page 19, lines 3-5. Support for new claim 13 is found on page 19, lines 11-22. Thus, no new matter will be added upon entry of the amendment.

Upon entry of the amendment, claims 1-13 will be active.

Remarks

Applicants thank Examiner Lopez for conducting the kind and courteous discussion with Applicants' representative on October 8, 2004. The content of the discussion is reflected in the amendments to the claims and the comments contained herewith. It is kindly requested that the Examiner favorably reconsider the outstanding rejections in view of the following.

As previously noted in Applicants Response filed June 8, 2004, in the production of glass used for panels for cathode ray tubes, it is common knowledge that in addition to the raw components, Sb_2O_3 is used as an additive in an amount that ranges from 0.2 to 0.6 mass % (see Specification, page 2, lines 1-15). Its incorporation serves to **reduce defects** associated with bubbles within the panel glass.

However, it is known that if too much Sb_2O_3 is added the resultant glass contains defects which are due to the presence of ash. It is therefore very difficult to suppress both ash defects and bubble defects at the same time.

Applicants have found that it is now possible to produce panel glass for cathode ray tubes, by a process that allows for exclusion of Sb_2O_3 in which **no bubble defects** are present in the glass. Exclusion of Sb_2O_3 means that ash defects are eliminated as well. In the event

that it is necessary to prepare glass with added Sb_2O_3 , the process allows for only a slight addition of Sb_2O_3 in an amount that is lower than the level of conventional panel glass of cathode ray tubes (the content of Sb_2O_3 in Claim 1 is from 0 to 0.19 mass%).

The method for preventing the bubble defects is accomplished by varying the water content in the glass and carrying out vacuum degassing at a pressure of P which ranges from P_A to $6.1W+0.06$ atm.

The rejection of claims 1-4 and 8 under 35 U.S.C. § 102(b) in view of Tanaka et al. (Proceedings of the International Conference on Science and Technology of New Glasses, 1981, A4, pps. 71-76) is respectfully traversed.

Tanaka describes degassing molten soda-lime glass with a silicon dioxide content of 73.2wt%.

This is in contrast to process directed to panel glass as claimed in claims 1-13.

Tanaka does not anticipate the claimed invention. It is respectfully requested that the Examiner withdraw this rejection.

Furthermore, it is noted that there is no suggestion contained in Tanaka's disclosure to treat panel glass at a pressure that does not exceed $6.1W+0.06$ atm, where W is the amount of water in the molten glass, expressed in terms of mass percent. Tanaka suggests treating "a float glass, i.e., a soda-lime glass refined with sulfate" (p. 72, 2nd ¶), but there is no suggestion to degas molten panel glass as claimed in either claims 1-9.

In the absence of such a suggestion, it is respectfully requested that the Examiner determine that the claimed invention is unobvious in view of Tanaka's disclosure.

In a like manner, the rejection of claim 5 under 35 U.S.C. § 103(a) over Tanaka in view of Yanagisawa et al. (U.S. 6,251,811) is traversed.

As noted above, Tanaka describes vacuum degassing molten soda-lime glass with a silicon dioxide content of 73.2wt%, but does not suggest vacuum degassing molten panel

glass with a composition as claimed in claim 1. It would appear that Yanagisawa's disclosure describes a glass composition similar to the composition recited in claim 1, but Yanagisawa does not vacuum degas molten panel glass. Absent any suggestion in Tanaka to vacuum degas a molten glass other than soda-lime glass, there can be no basis for combining the disclosures of Tanaka and Yanagisawa in order to sustain an obviousness rejection (MPEP § 2145(III); *In re Keller* (208 USPQ 871) and *In re Sneed* (218 USPQ 385)).

Furthermore, it is noted that patentability of the claimed invention in view of the combined disclosures of Tanaka and Yanagisawa is further bolstered by noting that the claimed invention is directed to a process for vacuum degassing molten panel glass in an atmosphere under a pressure P_A which is lower than P_0 , wherein the pressure P of the molten glass is made to be at most $(6.1W+0.06)$ atm in the vacuum degassing step, wherein W is the content of said H_2O as represented by mass percentage.

This aspect is not suggested in the combined references. Accordingly, it is kindly requested that the Examiner withdraw this rejection.

The rejection of claims 1-3 and 6-7 under 35 U.S.C. § 103(a) over Ishimura et al. (Re 36,082) or alternatively over Kawaguchi et al. (U.S. 6,332,339) is traversed.

Like Tanaka, these two references disclose that vacuum degassing of glass is possible. There is no discussion of the effect of the water content in the molten glass on the pressurizing step, for that matter, there is no suggestion to vacuum degas a molten panel glass with a compositional makeup as claimed in claim 1.

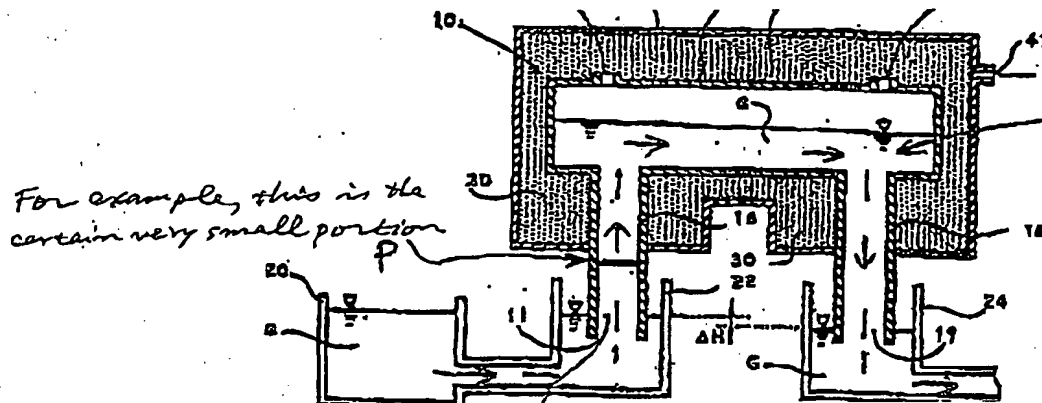
It is noted that there are many processes directed to molten glass, but to pick and choose a combination and apply it to a process directed to vacuum degassing molten panel glass is simply impermissible in the absence of a suggestion to do otherwise.

This notion should also be viewed with respect to the observation that bubbles in panel glass "can be reduced without incorporating Sb_2O_3 or incorporating a smaller amount

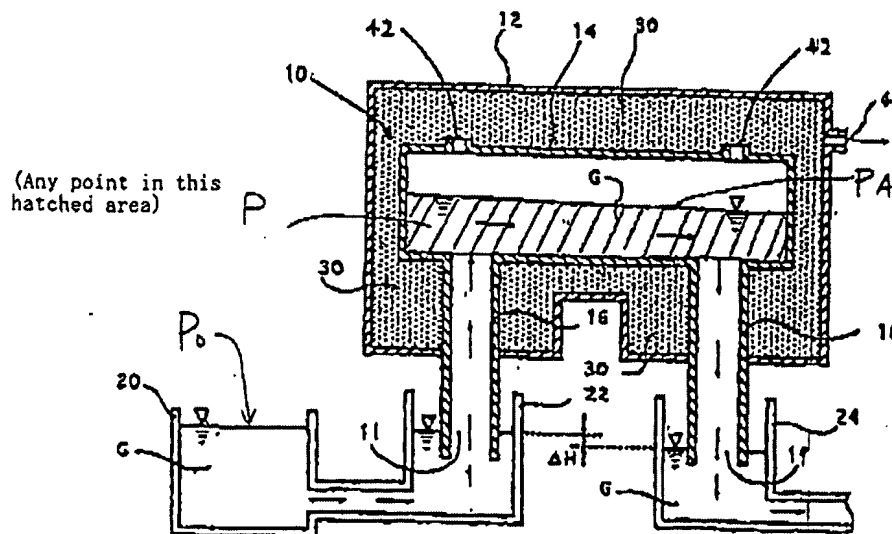
of Sb_2O_3 " than previously described. This makes it possible to reduce, or even eliminate, ash effects the stem from the presence of Sb_2O_3 in the precursor glass composition (see page 21, first full paragraph).

Since neither Ishimura nor Kawaguchi suggest a process which comprises vacuum degassing molten panel glass to a pressure that is dependent upon the water content, especially in view of the superior results obtained therefrom, it is respectfully requested that the Examiner withdraw this rejection.

Applicants wish to correct an error present in Applicants' response filed June 8, 2004. In this response, it was stated that the very small portion of the molten glass where the pressure P of the molten glass is made to be at most $(6.1W+0.06)$ atm in the vacuum degassing step, wherein W is the content of said H₂O as represented by mass percentage, is that portion of the molten glass that leads to the riser tube 16. This is an error.



The very small portion in question is that portion of molten glass in the vacuum degassing tank 10, as shown in the hatched portion in the following Figure.



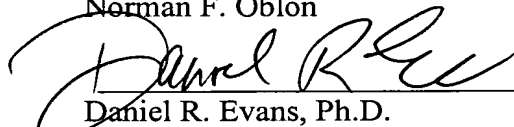
Finally, Applicants kindly request that the Examiner, return a copy of an initialed, signed, and dated Form PTO-1449, which contain references that were cited in the **Information Disclosure Statement** filed on May 30, 2002.

Additionally, Applicants attach herewith a copy of a Chinese Office Action for Chinese Patent Application No. 02108548.X. This Office Action cites one reference, U.S. Patent No. 4,919,700; which was previously cited in an **Information Disclosure Statement** filed on July 30, 2002.

In view of the amendments to the claims and the above comments, it is believed that the application is in a condition for allowance. An early and favorable indication of the same is earnestly requested.

Respectfully submitted,
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